

Non-Motorized Traffic Counts

Operations and Estimation Methodology



City of Minneapolis
Public Works Department
Traffic and Parking Services
Updated January 2012



Contents

About this Report	2
Background	3
Why are non-motorized traffic counts conducted?	3
When are non-motorized counts conducted?	3
How are non-motorized counts conducted?	4
Where are the count locations?	4
How frequently are locations counted?	5
How is data collected for motor vehicles and transit riders?	5
Weather Data	6
The Need for Estimations	6
Estimation Methodology	7
Adjustment Factors	8

Appendix

Count Volunteer Training Procedure	11
Count Weather Conditions 2007-2011	15
Non-Motorized Traffic Count Locations	16
Extent of Bicyclist Data through 2013	17
Extent of Pedestrian Data through 2013	18
List of Count Locations	19

About this Report

This report provides an overview of the City of Minneapolis' non-motorized traffic counting operations and serves as a companion document to the City's Annual Bicyclist and Pedestrian Count Report. Estimation methodology is updated annually with current count data.

For questions related to non-motorized traffic counts, please contact Simon Blenski at 612-616-7345 or simon.blenski@minneapolismn.gov.

Some illustrations in this report are based on illustrations by Chicago Cartographics for the Minneapolis Bicycle Map, published by Hedberg Maps, Inc.

Background

Since 2007 the Minneapolis Public Works Department has partnered with Transit for Livable Communities (TLC) to conduct annual non-motorized traffic counts. TLC is the local manager of the Federally-funded Non-Motorized Transportation Pilot Program (NTP) grant and conducts counts as part of its ongoing evaluation of NTP projects in Minneapolis. While TLC's count efforts primarily focus on NTP evaluation, data is shared with Public Works, as the counting methods are similar.

Why are non-motorized traffic counts conducted?

Non-motorized traffic counts are conducted to measure annual changes in bicycling and walking levels and to gain an understanding of non-motorized traffic in Minneapolis. Data collected during the counts is used in the following ways:

1. To understand the relative importance of various streets and trails for bicyclists and pedestrians.
2. To understand the extent to which bicyclists use streets versus sidewalks and bicycle paths.
3. To understand bicyclist and pedestrian traffic on various streets in comparison to motor vehicle occupants and transit riders (mode shares).
4. To measure the effects of improvements made to streets.
5. To determine if Minneapolis is meeting its target of increasing bicycling, as outlined by the City's sustainability indicators.

When are non-motorized counts conducted?

Time of Year

Non-motorized counts are conducted annually during the second full week of September. Make-up counts are usually conducted in the third or fourth week of September. This observation period captures warm-weather traffic in addition to trips generated by school activities. The count days also align with dates selected by the National Bicycle and Pedestrian Documentation Project - a nationwide effort to collect consistent and accurate non-motorized traffic data. Year-round trail counts show that a typical September count in Minneapolis yields about 80 percent of annual peak traffic observed in July-August.

Days of the Week

Non-motorized counts are conducted on Tuesday, Wednesday or Thursday to capture routine weekday traffic. Weekend trips, while a significant period for non-motorized traffic, are more difficult to count due to inconsistent travel patterns.

Time of Day

Public Works collects data over three different time periods.

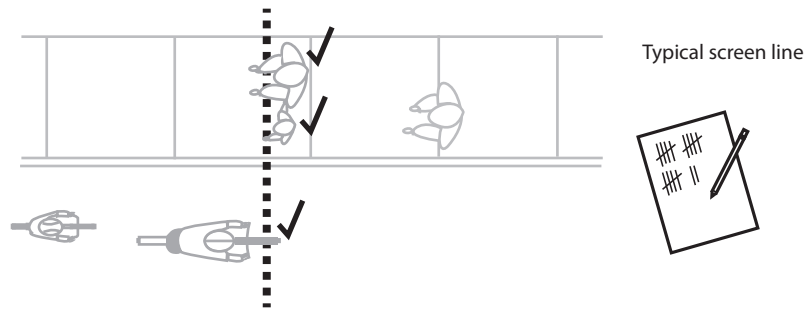
- 2-hr Counts – All of TLC's counts and the majority of Public Works counts are 2-hr counts conducted from 4:00 p.m. - 6:00 p.m. This period represents the afternoon peak period. Estimation methods are then used to determine 24-hr totals.
- 12-hr Counts – At some locations 12-hr counts are conducted from 6:30 a.m. – 6:30 p.m. Estimation methods are then used to determine 24-hr totals.
- 24-hr Counts – Public Works currently has automatic loop-detectors at three locations along the Midtown Greenway, which count bicycle traffic year-round, 24 hours a day. The counters only detect bicycles and do not count pedestrians or other trail users.

How are non-motorized counts conducted?

Manual Counts

Most counts are conducted with human field observations in which volunteers manually tabulate the number of bicyclists and pedestrians. Volunteer training information can be found in the Appendix.

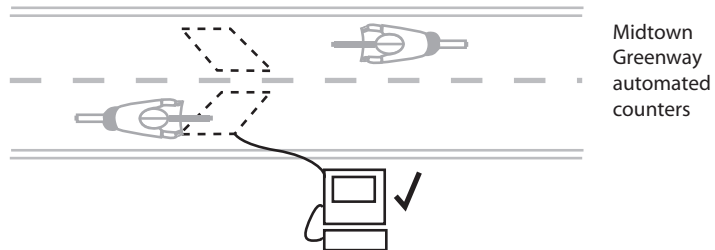
At each count location, an imaginary screen line is drawn across a street, including the sidewalks and/or bicycle paths. All bicyclists and pedestrians crossing that line are counted. Individuals using other means of non-motorized transportation (skateboard, roller-blades, etc.) are also counted and categorized. Standardized bicyclist and pedestrian count forms and volunteer training materials can be found in the Appendix.



The counts focus on recording individuals, not conveyances. For example two individuals riding a tandem bicycle are counted as two bicyclists, rather than one bicycle. If someone crosses the line multiple times, he or she is counted each time.

Automated Counts

At some locations on the Midtown Greenway, inductive loop detectors are used to count bicycles year-round, 24 hour a day. The detectors register the presence of metal passing over the loops, although the number bicycles counted is inexact. Precise error rates have not been determined; however, preliminary analysis indicates that the Hennepin Ave location may be over-counting by as much as 40 percent on certain days. The Cedar Ave location is overcounting by five percent and the West River Pkwy location is under-counting by three percent. DPW will continue to monitor the discrepancies and adjustment factors may be incorporated once the issues are fully understood.



Where are the count locations?

Each year, non-motorized traffic counts are conducted at a variety of locations including bicycle paths, pedestrian shortcuts, busy streets, local streets, downtown streets, on bridges, in residential neighborhoods, in parks, near schools, college campuses, transit stations and along commercial corridors. The selected locations attempt to capture a variety of riding and walking environments that attract an array of recreational and utilitarian users.

In addition, counts are often conducted near new or planned bicycle and pedestrian projects as a way to measure the impact of new facilities on non-motorized traffic. Many of these locations are in corridors and priority areas outlined in the Minneapolis Bicycle (2011)¹ and Pedestrian (2009)² Plans.

How frequently are locations counted?

To provide a consistent measure for determining annual changes in bicycling and walking levels in Minneapolis, Public Works counts 30 bicycling locations and 23 walking locations on an annual basis. Approximately 280 locations are part of a 3-year cycle, in which each of the location is counted every three years. Other locations are counted on an as needed basis. If a location is not part of the annual or 3-year cycle, it does not exempt the location from ever being counted.

The count cycles are as follows.

- *Annual Cycle* – 30 bicycling locations and 23 walking locations counted annually.
- *3-Year Cycle* – Approximately 280 locations counted every three years (90-100 count locations each year). This cycle was established in 2011 and will be used going forward.
- *Historical/Specialized Counts* – Locations that have since been retired or counted once to collect specialized data. Public Works currently has about 100 of these locations.

A map of the count locations through 2011 can be found in the Appendix.

How is data collected for motor vehicles and transit riders?

Occasionally, Public Works augments non-motorized traffic counts with motor vehicle and transit counts. For years in which this analysis is done, the following methods are used.

Motor Vehicle Occupants

Motor vehicle counts are collected from April to October using pneumatic tubes stretched across a street and connected to an automated counter. Two days of data is collected and then averaged to obtain an Annual Average Daily Total (AADT). At locations where motor vehicle counts are not available, data from a proximate location may be used as a substitute.

To calculate motor vehicle occupants for a location, the motor vehicle AADT is multiplied by 1.26. This was the average auto occupancy determined during a cordon count conducted in the downtown area in 2003. Under this assumption, a location with an AADT of 1,000, the number of motor vehicle occupants would be 1,260.

Transit Loads

Transit counts are collected by Automatic Passenger Counters (APCs) installed on most Metro Transit buses. These devices detect boardings and alightings by stop, with the cumulative difference being the load. As of 2011, APCs are not yet installed on light rail vehicles, so manual counts at light rail stations are routinely conducted by Metro Transit.

¹ www.minneapolismn.gov/bicycles

² www.minneapolismn.gov/pedestrian

Transit counts are also collected from the University of Minnesota Parking and Transportation Services to include ridership on Campus Connector shuttles. The data reflects average daily loads during each academic school year. Transit loads for suburban transit providers such as Southwest Transit, Minnesota Valley Transit, and Plymouth Metrolink are not currently included in this data.

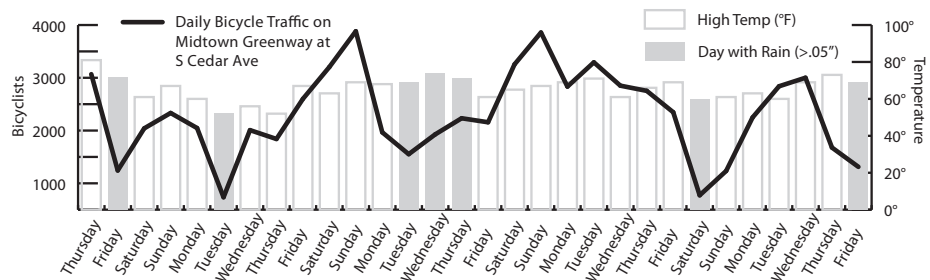
Deriving Mode Shares

Data collected for motor vehicle occupants and transit loads, combined with bicyclists, pedestrians, and other users, allows for the derivation of mode shares for applicable facilities. The most recent mode share data reflects 2010 traffic.

Weather Data

The effect of various daily weather conditions on non-motorized levels has not been determined for Minneapolis. However, the following graph, showing daily bicycling traffic on the Midtown Greenway and daily weather conditions during a 30-day sample, suggests that there is a relationship between bicycling traffic and weather conditions. Variations in pedestrian traffic likely follow similar patterns.

Complete 2007-2011 count weather conditions can be found in the Appendix.

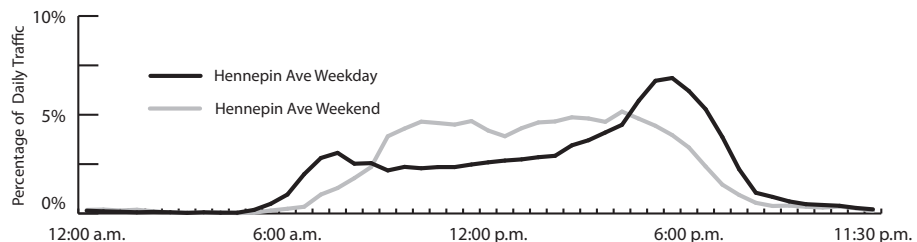


The Need for Estimations

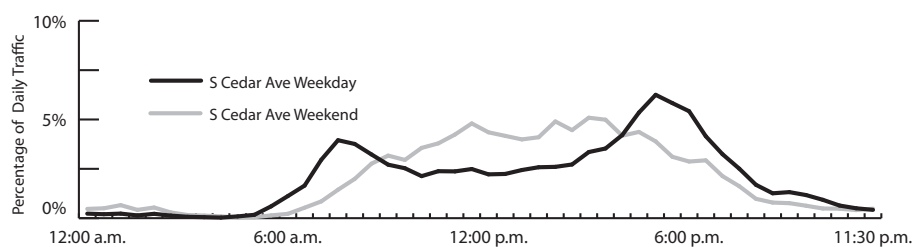
Manual counts are currently the most reliable and cost-effective manner in which to conduct non-motorized traffic counts. However, due to the limited nature of human availability, particularly during nighttime hours, collecting 24-hrs of data is not feasible on a widespread basis. For this reason, models are used to determine the Estimated Daily Total (EDT) for non-motorized traffic.

Midtown Greenway 24-hr Automated Counts

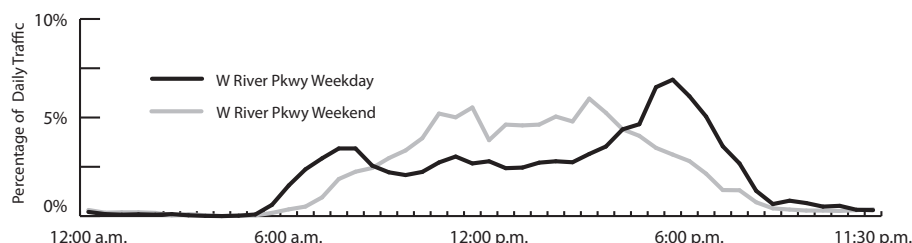
24-hour count data is available for bicycling at three locations along the Midtown Greenway: Hennepin Avenue, Cedar Avenue, and at West River Parkway. At each location, an automatic counter is connected to inductive loop detectors embedded in the trail surface.



The graph below displays the temporal distribution of bicycle traffic on the Midtown Greenway at Hennepin Avenue for both weekday and weekend traffic.



And the same at S Cedar Ave:



And at W River Pkwy:

Because the Midtown Greenway has higher rates of recreational riding than a typical street, these figures are not assumed to estimate 24-hour bicycling traffic on typical city streets, nor are they used to estimate 24-hour pedestrian traffic.

Estimation Methodology

In order to estimate the complete 24-hr period, two assumptions are used:

- *Assumption 1* - 75 percent of bicycle and pedestrian traffic occurs between 6:30 a.m. and 6:30 p.m.
- *Assumption 2* - 20 percent of bicycle traffic and 18 percent of pedestrian traffic occurs between 4:00 p.m. and 6:00 p.m.

Assumption 1:

The assumption that 75 percent of bicycle and pedestrian traffic occurs between 6:30 a.m. and 6:30 p.m. originates from Seyfried (2007)³, and is based on motor vehicle traffic between 7:00 a.m. and 7:00 p.m. The applicability of this figure to bicyclist and pedestrian counts is under continued investigation for two reasons:

First, the differences between motorized and non-motorized traffic patterns over the course of the day are unknown. Presumably they are minor, but measurable. For example, it is possible that bicyclist or pedestrian traffic during nighttime hours is lower than motor vehicle traffic because of concerns of safety and visibility.

Second, because the 7:00 a.m. to 7:00 p.m. period does not match the 6:30 a.m. to 6:30 p.m. period, the assumption is inherently flawed. 6:30 a.m. to 6:30 p.m. has been the traditional period to conduct manual counts in Minneapolis, since the downtown manual cordon count began in the 1960s. Traffic movements are greater between 6:30 p.m. and 7:00 p.m. when compared to 6:30 a.m. and 7:00 a.m. As a

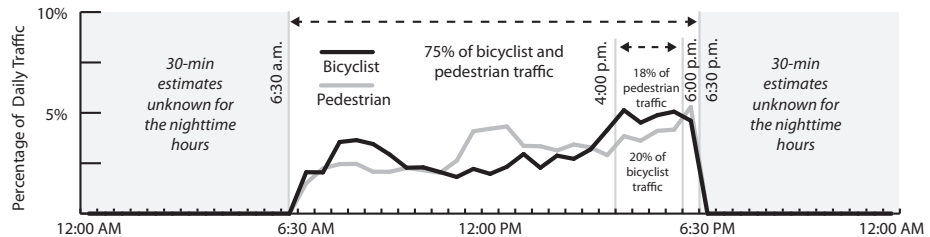
³ Seyfried, Robert. The Fundamentals of Traffic Engineering. University of California. 2007.

result, it is likely that the 75 percent figure would be lower if it encompassed the morning half hour instead of the evening half hour.

Assumption 2:

The 20 percent bicyclist and 18 percent pedestrian figures originate from an analysis of 12-hr count locations. The locations represent 64, 12-hr count locations in Minneapolis counted between 2007-2011.

The graph below illustrates the temporal distribution of bicyclist and pedestrian traffic over a 12-hr period. Using the assumption that 75 percent of non-motorized traffic occurs between 6:30 a.m. and 6:30 p.m., the percentage of 4:00 p.m. to 6:00 p.m. traffic can be calculated. It is assumed that all locations follow these traffic patterns. Although, surrounding land uses certainly generate different travel



patterns throughout the day.

Temporal distribution of bicyclist and pedestrian traffic:

Adjustment Factors

There are instances when adjustments are made to estimate missed counts or account for environmental factors.

Missed count adjustments:

- *Annual count location is missed* – In the instance when an annual count location is missed, a 3-year rolling average is calculated based on historical data.
- *3-yr count location missed* – In the instance when a 3-yr count location is missed, the count location is attempted to be counted the following year. If that location is missed again, then Public Works will wait until the normal count schedule again.
- *2-hr period of a 12-hr count location is missed* – In the instance when one period of a 12-hr count location is missed, an estimate is made. This estimate is based on the temporal distribution of the 64, 12-hr locations (see Assumption 2 under Estimation Methodology). If two or more 2-hr periods are missed during a 12-hr counts, the count will likely not be used, unless the location is assumed to adhere closely to the temporal variation of the 12-hr model. Separate estimations are used for bicyclist and pedestrian traffic.
- *Portion of a 2-hr count location is missed* – In the instance when a portion of a 2-hr count is missed, an estimate is used as determined by the location. If more than 15 minutes of a 2-hr count period is missed, the count will likely not be used.

One-way couplet adjustments:

- *One-way inbound and outbound couplets* – For 2-hr locations counted along one-way couplets, an adjusted estimation is used to determine daily traffic. For these streets it is assumed that traffic is weighted in the morning (inbound) or afternoon (outbound). This is based on analysis of 12-hr counts conducted in 2007. Examples of one-way couplets include S Park Ave/S Portland Ave, S 1st Ave/S Blaisdell Ave, and N Emerson Ave/N Fremont Ave. For inbound streets, it is assumed that 10 percent of bicyclist traffic occurs between 4:00 p.m. and 6:00 p.m. For outbound streets, it is assumed that 30 percent of bicyclist traffic occurs during this time. Adjustments are not made to pedestrian traffic or other users.

At this time, Public Works does not use any adjustments for weather or adjacent land uses.

Appendix

Minneapolis Public Works Count Volunteer Training

Minneapolis Public Works Count Form

Transit for Livable Community Count Form

Count Weather Conditions 2007-2011

Maps:

- Count Locations

- Extent of Bicyclist Traffic Data by 2013

- Extent of Pedestrian Traffic Data by 2013

Count Location List

Count Volunteer Training Procedure

To conduct the majority of its non-motorized counts, Public Works relies on the enthusiastic and dedicated work of volunteers. Prior to the annual September count dates, volunteers are recruited through the City's bicycling and walking e-mail update lists. In 2011, there were approximately 4,000 subscribers to the bicycling e-mail list and another 2,100 subscribers to the walking e-mail list. Through this and other outlets, Public Works recruits nearly 100 volunteers annually to assist with counts.

Volunteer registration and training is administered through an online survey interface. Registrants are provided basic background information about the counting process, procedures for tabulating data, and instructions for submitting the data after the count is conducted. The registration and training takes approximately 15 minutes to complete.

After registering, volunteers are contacted by Public Works' staff to select a specific count time and location and to discuss any remaining questions about the count process. Once the count assignment is confirmed, volunteers are provided necessary count materials including the count form, a map of their count location and a stamped and pre-addressed envelope to return the materials.

The day of the count, Public Work's staff visit the count locations to ensure counts are being conducted and to answer any questions volunteers may have. After the count, volunteers submit their completed count forms by e-mail, mail, or in-person at the Public Works offices. This process has proven successful for Public Works as the attendance rate for volunteers is 96 percent and the return rate for completed count forms is 98 percent.

Public Works acknowledges that manual counts may not produce results that are 100 percent accurate. However, all count results are thoroughly analyzed and compared with data from previous years and similar locations before the count results are used.



A volunteer counts pedestrians on Nicollet Mall.

Minneapolis Public Works Standardized Bicyclist/Pedestrian Count Form

Name: _____ Date: _____

Screen Line (see attached map for a visual): _____

Instructions (Questions? Call Simon Blenski at 612-275-6754):

- Use tally marks in groups of 5 to indicate each bicyclist or pedestrian (4 = ||||, 5 = |||||).
- Count all bicyclists and pedestrians crossing your screen line.
- Count both sides of the street, including sidewalks and/or paths in both directions.
- Count repeat trips if noticeable.
- If you were late, please note the precise time you began counting here: _____

Notice anything exceptional that may affect the count (weather, construction, parade, traffic accident)?
Please note it on the back.

Half Hour Time Periods	Bicyclists ¹		Pedestrians	
	Riding in Street	Riding on Sidewalk and/or Path	Walking or Using Assisted Device ²	Other ³
4:00-4:30				
4:30-5:00				
5:00-5:30				
5:30-6:00				
Total				

¹ Count the number of people bicycling, rather than the number of bicycles (Tandem = 2 bicyclists, Trailer w/2 children = 3). Individuals on unicycles, tricycles, & electric-assist bicycles as bicyclists. Someone walking a bicycle is a pedestrian.

² Includes individuals walking, crawling, using wheelchairs, electric scooters, children being carried or in a stroller.

³ Includes skaters, roller bladers, skateboarders, skiers, segways, and kick scooters. Do not count motor scooters or golf carts.

Please mail completed form to 350 S 5th Street, Rm 203, Minneapolis, MN 55415 Attn: Bike/Ped Counts or scan and email to simon.blenski@minneapolismn.gov.
Thank you!

Bike Walk Twin Cities BICYCLIST/PEDESTRIAN COUNT FORM FALL 2010



Name: _____ Location: _____ Site # _____
 Date: _____ Time Start: _____ Finish: _____

Time (period)	Bicyclists		Child	NR	Sidewalk Riding
	Male	Female			
4:00 - 4:15 (1)					
4:15 - 4:30 (2)					
4:30 - 4:45 (3)					
4:45 - 5:00 (4)					
5:00 - 5:15 (5)					
5:15 - 5:30 (6)					
5:30 - 5:45 (7)					
5:45 - 6:00 (8)					

	Pedestrians		Child	Asst
	Male	Female		

See Additional Instructions on Back of count sheet.

Comments/observations: Describe any factors that may have affected your count (rain, vehicle crash at site, road construction, snow or ice on travel way etc.)

Counter Instructions

Plan to arrive at your count location at least **10 minutes in advance** to get organized (park, lock bike, survey the situation). The count map identifies the screen line location and suggested observation location. Counters may wish to choose a different point of observation due to the weather and light conditions, but try to avoid this unless absolutely necessary. It is acceptable to use a different point of observation **provided the screen line is the same**. Be sure to make a note if the point of observation is changed.

Arriving at the count location

- Begin count at exactly 4:00 PM and note the time on the count sheet.
- Make a note of weather conditions including temperature, if known
- Additionally note any conditions on the sidewalk or roadway that may impact travel including:
 - Pot holes and general disrepair
 - Snow or ice in the travel way
 - Barriers or obstructions (i.e. temp construction, illegally parked car)

Conducting the count

Use the count sheet to record every pedestrian and bicyclist **each time they cross the screen line**

Record a mark for each individual bicyclist-male/female or pedestrian-male/female in the appropriate column.

What if gender is not clear? - There is always the possibility that a person's gender will be unclear from simple observation, if unsure use male as a default and make a note of the number of uncertain gender occurrences in the notes at the bottom of the page.

Record **an additional mark** for other attributes (columns shaded in gray) as follows:

- **Child** – record additional mark for any individual appearing to be under 16 (use best judgment).
- **NR** – record a mark for each bicyclist that is riding a NiceRide Bike Share Bicycle
- **Sidewalk Riding** – At locations where applicable additional mark for cyclists riding on the sidewalk on either side of the street.
- **Asst** – Record additional mark for individuals using any sort of assistive device including but not limited to; walkers, canes, wheelchairs (automatic or manual) crutches, Segways, skateboards, in-line skates (all variations), strollers, and/or being carried by another pedestrian (such as a small child)

Counting Bicycles

Emphasis is on each person on a bicycle not the number of actual bikes. Count each person crossing the screen line on a bicycle, this includes small children in seats, children in a trailer, individuals riding in addition to the cyclist.

Counting Pedestrians

The counter should record every person each time the screen line is crossed as either a male or female pedestrian and record an additional mark for child or Asst or both when applicable.

Space for additional Comments/Notes:



THANK YOU!

Please return completed count sheet to:

Tony Hull
Transit for Livable
Communities
Bike Walk Twin Cities
626 Selby Ave
St Paul, MN 55104

Count Weather Conditions 2007-2011¹

Year	Day	% of Annual Counts	High (°F)	Low (°F)	+/- from Norm Avg (°F)	Avg Wind (mph)	Rain (inches)
2007	9/11/07	39%	61	46	-9	15.1	0
2007	9/12/07	10%	67	41	-8	7.4	0
2007	9/19/07	21%	70	55	3	8	0
2007	9/26/07	29%	68	45	0	5.8	0.28
2007	9/27/07	2%	72	52	5	6.7	0
2008	9/9/08	53%	69	45	-6	5.3	0
2008	9/10/08	47%	70	55	0	12.3	0
2009	9/8/09	5%	80	60	6	9.2	0
2009	9/9/09	12%	80	61	8	6	0
2009	9/15/09	44%	84	58	10	3.1	0
2009	9/16/09	12%	75	60	7	6.1	0
2009	9/17/09	16%	82	59	11	3.3	0
2009	9/22/09	5%	70	60	6	3.5	T
2009	9/23/09	2%	78	62	12	4.1	T
2009	9/24/09	4%	78	58	10	3.4	T
2010	8/25/10	<1%	83	63	3	4.2	0
2010	9/14/10	48%	68	53	-1	5.1	0
2010	9/16/10	19%	56	50	-8	9	0
2010	9/21/10	4%	77	53	6	8.7	0.53
2010	9/22/10	5%	65	48	-2	9.7	0
2010	9/28/10	6%	66	54	4	7.7	0
2010	9/29/10	5%	74	52	7	8.8	0
2010	9/30/10	10%	72	49	4	5.7	0
2010	10/7/10	2%	74	46	7	3.3	0
2011	9/13/11	65%	70	54	-1	10.1	0
2011	9/14/11	26%	60	41	-12	12.1	0
2011	9/15/11	6%	58	36	-15	3.4	0
2011	9/20/11	3%	73	55	4	14.5	0.04
2011	9/28/11	<1%	81	56	13	2.4	0

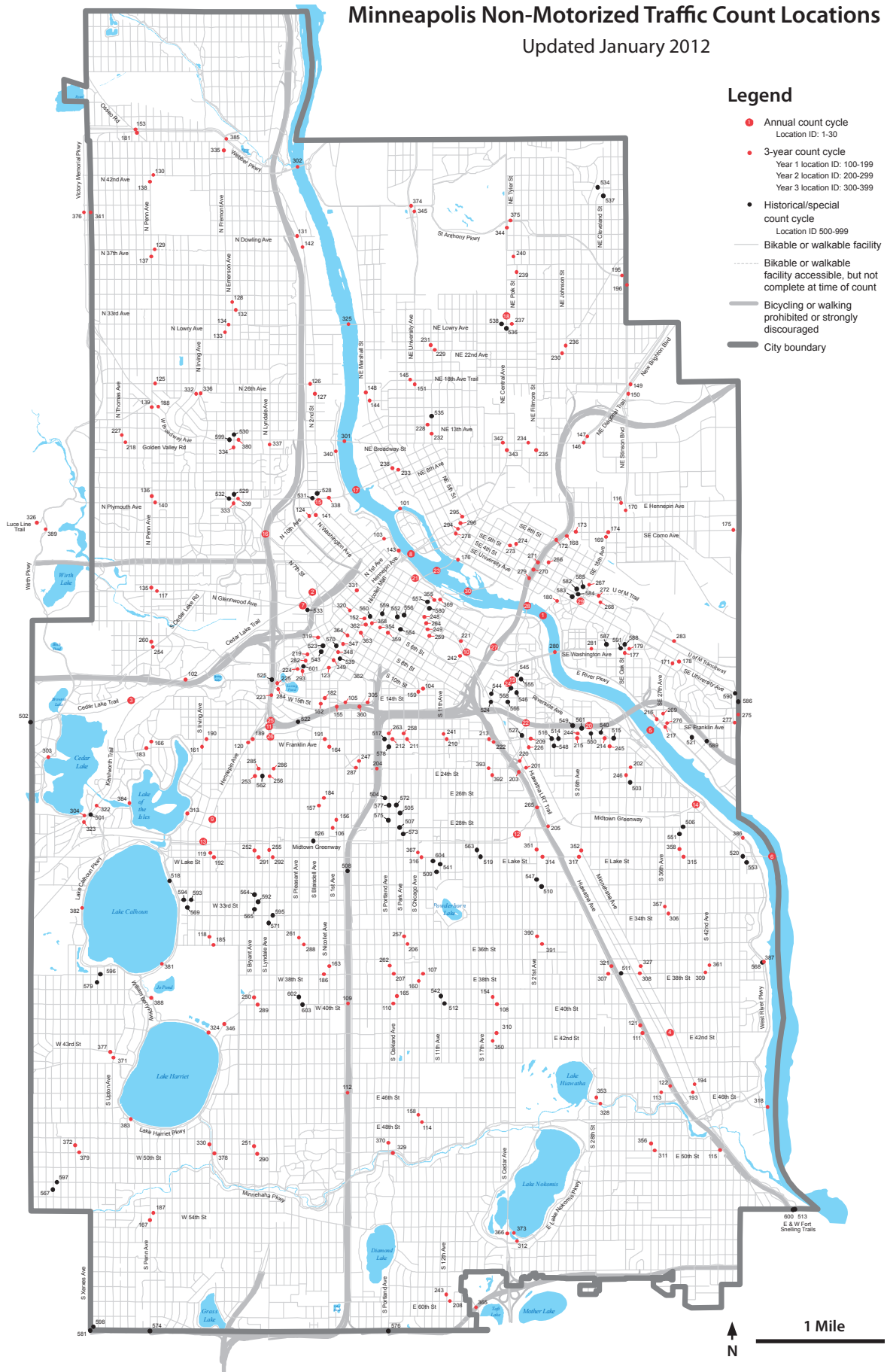
¹ Minnesota Climatology Working Group, www.climate.umn.edu

Minneapolis Non-Motorized Traffic Count Locations

Updated January 2012

Legend

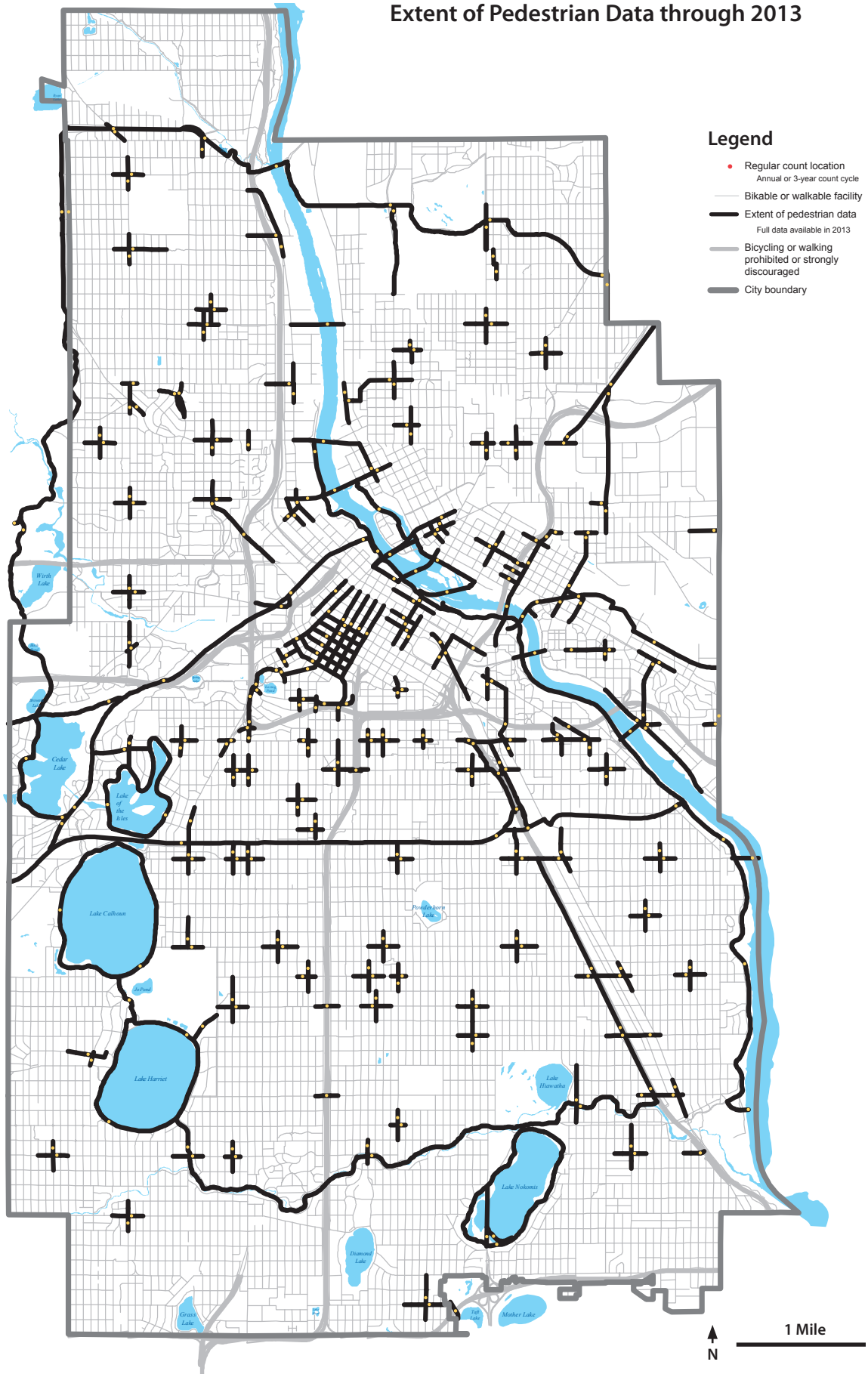
- Annual count cycle
Location ID: 1-30
- 3-year count cycle
Year 1 location ID: 100-199
Year 2 location ID: 200-299
Year 3 location ID: 300-399
- Historical/special count cycle
Location ID 500-999
- Bikable or walkable facility
- Bikable or walkable facility accessible, but not complete at time of count
- Bicycling or walking prohibited or strongly discouraged
- City boundary



Extent of Bicyclist Data through 2013



Extent of Pedestrian Data through 2013



List of Count Locations

ID	Cycle	Location
1	A	Bridge 9 over Mississippi River
2	A	Cedar Lake Trail north of N Royalston Ave Exit
3	A	Cedar Lake Trail west of Kenilworth Trail
4	A	E 42nd St east of Minnehaha Ave
5	A	E Franklin Ave Bridge over Mississippi River
6	A	E Lake St Bridge over Mississippi River
7	A	Glenwood Ave west of N Royalston Ave
8	A	Hennepin Ave Bridge over Mississippi River
9	A	Hennepin Ave north of W 28th St
10	A	Hiawatha LRT Trail east of S 11th Ave
11	A	Loring Bikeway Bridge over S Lyndale Ave
12	A	Midtown Greenway east of S Cedar Ave
13	A	Midtown Greenway west of Hennepin Ave
14	A	Midtown Greenway west of West River Pkwy
15	A	N 2nd St south of N Plymouth Ave
16	A	N 7th St over I-94
17	A	N Plymouth Ave Bridge over Mississippi River
18	A	NE Central Ave north of NE Lowry Ave
19	A	Riverside Ave east of S Cedar Ave
20	A	Riverside Ave over I-94
21	A	S 1st St west of S 3rd Ave
22	A	S 20th Ave over I-94
23	A	S 3rd Ave Bridge over Mississippi River
24	A	S Cedar Ave south of Riverside Ave
25	A	S Lyndale Ave north of Loring Bikeway Bridge
26	A	S Lyndale Ave north of W Franklin Ave
27	A	S Washington Ave over I-35W
28	A	SE 10th Ave Bridge over Mississippi River
29	A	SE 15th Ave north of SE University Ave
30	A	Stone Arch Bridge over Mississippi River
101	1	Boom Island Pedestrian Bridge over Mississippi River
102	1	Cedar Lake Trail under I-394
103	1	Cedar Lake Trail west of N West River Pkwy
104	1	E 14th St east of S Chicago Ave
105	1	E 16th St east of S 1st Ave
106	1	E 28th St west of S 1st Ave
107	1	E 38th St east of S Chicago Ave
108	1	E 40th St east of S 17th Ave
109	1	E 40th St Pedestrian Bridge over I-35W
110	1	E 40th St west of S Oakland Ave
111	1	E 42nd St west of Hiawatha Ave
112	1	E 46th St over I-35W
113	1	E 46th St west of S 36th Ave
114	1	E 48th St east of S Chicago Ave
115	1	E 50th St west of Hiawatha Ave
116	1	E Hennepin Ave west of SE 18th Ave
117	1	Glenwood Ave east of N Penn Ave
118	1	Hennepin Ave north of W 36th St
119	1	Hennepin Ave north of W Lake St
120	1	Hennepin Ave south of W Franklin Ave
121	1	Hiawatha Ave north of E 42nd St
122	1	Hiawatha Ave north of E 46th St

ID	Cycle	Location
123	1	Loring Greenway west of Nicollet Mall
124	1	N 10th Ave west of N Washington Ave
125	1	N 26th Ave east of N Penn Ave
126	1	N 26th Ave west of N 2nd St
127	1	N 2nd St south of N 26th Ave
128	1	N 33rd Ave east of N Emerson Ave
129	1	N 37th Ave east of N Penn Ave
130	1	N 42nd Ave east of N Penn Ave
131	1	N Dowling Ave west of N Washington Ave
132	1	N Emerson Ave north of N 33rd Ave
133	1	N Fremont Ave south of N Lowry Ave
134	1	N Lowry Ave east of N Fremont Ave
135	1	N Penn Ave north of Glenwood Ave
136	1	N Penn Ave north of N Plymouth Ave
137	1	N Penn Ave south of N 37th Ave
138	1	N Penn Ave south of N 42nd Ave
139	1	N Penn Ave south of W Broadway Ave
140	1	N Plymouth Ave east of N Penn Ave
141	1	N Washington Ave south of N 10th Ave
142	1	N Washington Ave south of N Dowling Ave
143	1	N West River Pkwy south of Cedar Lake Trail
144	1	NE 16th Ave east of NE Marshall St
145	1	NE 18th Ave Trail west of NE University Ave
146	1	NE Broadway St west of NE Diagonal Trail
147	1	NE Diagonal Trail north of NE Broadway St
148	1	NE Marshall St north of NE 16th Ave
149	1	NE New Brighton Blvd east of NE Stinson Blvd
150	1	NE Stinson Blvd south of NE New Brighton Blvd
151	1	NE University Ave south of NE 18th Ave Trail
152	1	Nicollet Mall north of S 7th St
153	1	Osseo Rd south of N 45th Ave
154	1	S 17th Ave north of E 40th St
155	1	S 1st Ave south of E 16th St
156	1	S 1st Ave north of E 28th St
157	1	S Blaisdell Ave south of W 26th St
158	1	S Chicago Ave north of E 48th St
159	1	S Chicago Ave south of E 14th St
160	1	S Chicago Ave south of E 38th St
161	1	S Irving Ave south of W Franklin Ave
162	1	S LaSalle Ave south of W 15th St
163	1	S Nicollet Ave north of W 38th St
164	1	S Nicollet Ave south of W Franklin Ave
165	1	S Oakland Ave north of E 40th St
166	1	S Penn Ave north of W 21st St
167	1	S Penn Ave south of W 54th St
168	1	SE 10th Ave south of SE Como Ave
169	1	SE 15th Ave south of SE Como Ave
170	1	SE 18th Ave south of E Hennepin Ave
171	1	SE 27th Ave south of SE University Ave
172	1	SE 8th St over I-35W
173	1	SE Como Ave east of SE 10th Ave
174	1	SE Como Ave east of SE 15th Ave

ID	Cycle	Location
175	1	SE Como Ave west of SE 33rd Ave
176	1	SE Main St east of S 3rd Ave Bridge
177	1	SE Oak St south of SE Washington Ave
178	1	SE University Ave east of SE 27th Ave
179	1	SE Washington Ave east of SE Oak St
180	1	U of M Trail under SE University Ave
181	1	Victory Memorial Pkwy east of Osseo Rd
182	1	W 15th St east of S LaSalle Ave
183	1	W 21st St west of S Penn Ave
184	1	W 26th St east of S Blaisdell Ave
185	1	W 36th St east of Hennepin Ave
186	1	W 38th St west of S Nicollet Ave
187	1	W 54th St east of S Penn Ave
188	1	W Broadway Ave east of N Penn Ave
189	1	W Franklin Ave east of Hennepin Ave
190	1	W Franklin Ave east of S Irving Ave
191	1	W Franklin Ave west of S Nicollet Ave
192	1	W Lake St east of Hennepin Ave
193	1	E 46th St west of Minnehaha Ave
194	1	Minnehaha Ave north of E 46th St
195	1	NE St Anthony Pkwy west of NE Stinson Pkwy
196	1	NE Stinson Pkwy south of NE St Anthony Pkwy
201	2	E 24th St east of Hiawatha LRT Trail
202	2	E 24th St east of S 31st Ave
203	2	E 24th St Pedestrian Bridge over Hiawatha Ave
204	2	E 24th St Pedestrian Bridge over I-35W
205	2	E 28th St east of Hiawatha Ave
206	2	E 36th St east of S Park Ave
207	2	E 38th St east of S Portland Ave
208	2	E 60th St east of S 12th Ave
209	2	E Franklin Ave east of Minnehaha Ave
210	2	E Franklin Ave east of S 11th Ave
211	2	E Franklin Ave east of S Park Ave
212	2	E Franklin Ave east of S Portland Ave
213	2	E Franklin Ave under Hiawatha Ave
214	2	E Franklin Ave west of Riverside Ave
215	2	E Franklin Ave west of S 26th Ave
216	2	East River Pkwy north of SE Franklin Ave
217	2	East River Pkwy south of SE Franklin Ave
218	2	Golden Valley Rd east of N Thomas Ave
219	2	Harmon Pl north of Spruce Pl
220	2	Hiawatha LRT Trail north of E 24th St
221	2	Hiawatha LRT Trail west of S 11th Ave
222	2	Little Earth Trail south of E Franklin Ave
223	2	Loring Bikeway south of W 15th St
224	2	Loring Park Bike Path west of Willow St
225	2	Loring Park Entrance north of W 15th St
226	2	Minnehaha Ave south of E Franklin Ave
227	2	N Thomas Ave north of Golden Valley Rd
228	2	NE 13th Ave west of NE 5th St
229	2	NE 22nd Ave east of NE 5th St
230	2	NE 22nd Ave west of NE Johnson St
231	2	NE 5th St north of NE 22nd Ave
232	2	NE 5th St south of NE 13th Ave

ID	Cycle	Location
233	2	NE 8th Ave east of NE Marshall St
234	2	NE Broadway Ave west of NE Fillmore St
235	2	NE Fillmore St south of NE Broadway St
236	2	NE Johnson St north of NE 22nd Ave
237	2	NE Lowry Ave west of NE Central Ave
238	2	NE Marshall St north of NE 8th Ave
239	2	NE Polk St south of NE 29th Ave
240	2	NE Tyler St north of NE 29th Ave
241	2	S 11th Ave north of E Franklin Ave
242	2	S 11th Ave south of Hiawatha LRT Trail
243	2	S 12th Ave north of E 60th St
244	2	S 26th Ave north of E Franklin Ave
245	2	S 29th Ave south of E Franklin Ave
246	2	S 31st Ave south of E 24th St
247	2	S 3rd Ave north of W 24th St
248	2	S 3rd St west of S Portland Ave
249	2	S 4th St west of S Park Ave
250	2	S Bryant Ave north of W 40th St
251	2	S Bryant Ave north of W 50th St
252	2	S Bryant Ave north of W Lake St
253	2	S Bryant Ave south of W 24th St
254	2	S Cedar Lake Rd east of S Penn Ave
255	2	S Lyndale Ave north of W Lake St
256	2	S Lyndale Ave south of W 24th St
257	2	S Park Ave north of E 36th St
258	2	S Park Ave north of E Franklin Ave
259	2	S Park Ave south of S 4th St
260	2	S Penn Ave north of S Cedar Lake Rd
261	2	S Pleasant Ave north of W 36th St
262	2	S Portland Ave north of E 38th St
263	2	S Portland Ave north of E Franklin Ave
264	2	S Portland Ave south of S 3rd St
265	2	Sabo Bridge over Hiawatha Ave
266	2	SE 10th Ave north of SE 5th St
267	2	SE 15th Ave north of SE 5th St
268	2	SE 17th Ave south of SE 5th St
269	2	SE 27th Ave north of SE Franklin Ave
270	2	SE 4th St over I-35W
271	2	SE 5th St west of SE 10th Ave
272	2	SE 5th St west of SE 17th Ave
273	2	SE 5th St west of SE 6th Ave
274	2	SE 6th Ave north of SE 5th St
275	2	SE Emerald St north of SE Franklin Ave
276	2	SE Franklin Ave east of East River Pkwy
277	2	SE Franklin Ave west of SE Emerald St
278	2	SE University Ave south of E Hennepin Ave
279	2	SE University Ave west of SE 10th Ave
280	2	SE Washington Ave Bridge over Mississippi River
281	2	SE Washington Ave west of SE Union St
282	2	Spruce Pl east of Harmon Pl
283	2	U of M Transitway east of SE 25th Ave
284	2	W 15th St east of Hennepin Ave
285	2	W 24th St east of S Bryant Ave
286	2	W 24th St east of S Lyndale Ave

ID	Cycle	Location
287	2	W 24th St west of S 3rd St
288	2	W 36th St east of S Pleasant Ave
289	2	W 40th St west of S Bryant Ave
290	2	W 50th St east of S Bryant Ave
291	2	W Lake St east of S Bryant Ave
292	2	W Lake St east of S Lyndale Ave
293	2	Willow St south of Yale Pl
294	2	E Hennepin Ave east of SE University Ave
295	2	NE 1st Ave east of NE 4th St
296	2	NE 4th St south of NE 1st Ave
301	3	Broadway Bridge over Mississippi River
302	3	Camden Bridge over Mississippi River
303	3	Cedar Lake Pkwy north of W 22th St
304	3	Cedar Lake Pkwy west of Kenilworth Trail
305	3	E 16th St east of S 3rd Ave
306	3	E 34th St east of S 36th Ave
307	3	E 38th St west of Hiawatha Ave
308	3	E 38th St west of Minnehaha Ave
309	3	E 38th St west of S 42nd Ave
310	3	E 42nd St east of S 17th Ave
311	3	E 50th St east of S 34th Ave
312	3	E Lake Nokomis Pkwy east of S Cedar Ave
313	3	E Lake of the Isles Pkwy south of W 27th St
314	3	E Lake St east of S 21st Ave
315	3	E Lake St east of S 38th Ave
316	3	E Lake St east of S Chicago Ave
317	3	E Lake St west of Minnehaha Ave
318	3	Ford Pkwy Bridge over Mississippi River
319	3	Hennepin Ave north of S 12th St
320	3	Hennepin Ave north of S 7th St
321	3	Hiawatha Ave north of E 38th St
322	3	Kenilworth Trail north of Cedar Lake Pkwy
323	3	Kenilworth Trail south of Cedar Lake Pkwy
324	3	Lake Harriet Pkwy west of Roseway Rd
325	3	Lowry Ave Bridge over Mississippi River
326	3	Luce Line Trail west of Wirth Pkwy
327	3	Minnehaha Ave north of E 38th St
328	3	Minnehaha Pkwy east of S 28th Ave
329	3	Minnehaha Pkwy east of S Portland Ave
330	3	Minnehaha Pkwy north of W 50th St
331	3	N 1st Ave south of N 4th St
332	3	N 25th Ave west of N Irving Ave
333	3	N 7th St south of N Plymouth Ave
334	3	N Emerson Ave south of W Broadway Ave
335	3	N Fremont Ave south of N 44th Ave
336	3	N Irving Ave north of N 25th Ave
337	3	N Lyndale Ave south of W Broadway Ave
338	3	N Plymouth Ave east of N 2nd St
339	3	N Plymouth Ave east of N Emerson Ave
340	3	N West River Rd south of W Broadway Ave
341	3	N Xerxes Ave north of N 39th St
342	3	NE Broadway St west of NE Central Ave
343	3	NE Central Ave south of NE Broadway St
344	3	NE Central Ave south of St Anthony Pkwy

ID	Cycle	Location
345	3	NE University Ave Path south of St Anthony Pkwy
346	3	Roseway Rd north of Lake Harriet Pkwy
347	3	S 10th St east of S LaSalle Ave
348	3	S 11th St east of S LaSalle Ave
349	3	S 12th St east of S LaSalle Ave
350	3	S 17th Ave south of E 42nd St
351	3	S 21st Ave north of E Lake St
352	3	S 26th Ave north of E Lake St
353	3	S 28th Ave north of Minnehaha Pkwy
354	3	S 2nd Ave north of S 7th St
355	3	S 2nd St west of S Portland Ave
356	3	S 34th Ave north of E 50th St
357	3	S 36th Ave north of E 34th St
358	3	S 38th Ave north of E Lake St
359	3	S 3rd Ave north of S 7th St
360	3	S 3rd Ave south of E 16th St
361	3	S 42nd Ave north of E 38th St
362	3	S 7th St east of S Marquette Ave
363	3	S 8th St east of S Marquette Ave
364	3	S 9th St east of S LaSalle Ave
365	3	S Bloomington Ave over Hwy 62
366	3	S Cedar Ave north of E Lake Nokomis Pkwy
367	3	S Chicago Ave north of E Lake St
368	3	S Marquette Ave north of S 7th St
369	3	S Portland Ave north of S 2nd St
370	3	S Portland Ave over Minnehaha Creek
371	3	S Upton Ave south of W 43rd St
372	3	S Zenith Ave north of W 50th St
373	3	SE Approach Path to S Cedar Ave Bridge over Lake Nokomis
374	3	St Anthony Pkwy over NE University Ave
375	3	St Anthony Pkwy east of NE Central Ave
376	3	Victory Memorial Pkwy north of N 39th St
377	3	W 43rd St west of S Upton Ave
378	3	W 50th St east of Minnehaha Pkwy
379	3	W 50th St east of S Zenith Ave
380	3	W Broadway Ave east of N Emerson Ave
381	3	E Lake Calhoun Pkwy south of W 36th St
382	3	W Lake Calhoun Pkwy north of Rose Lane
383	3	W Lake Harriet Pkwy east of S Sheridan Ave
384	3	W Lake of the Isles Pkwy north of Dean Pkwy
385	3	Webber Pkwy south of N 44th Ave
386	3	West River Pkwy north of E Lake St
387	3	West River Pkwy south of E 37th St
388	3	William Berry Pkwy north of W Lake Harriet Blvd
389	3	Wirth Pkwy south of Luce Line Trail
390	3	S 21st Ave north of E 36th St
391	3	E 36th St east of S 21st Ave
392	3	S 17th Ave south of E 24th St
393	3	E 24th St west of S 17th Ave
501	H	Cedar Lake Pkwy east of Kenilworth Trail
502	H	Cedar Lake Trail west of S Ewing Ave
503	H	E 25th St east of S 31st Ave
504	H	E 26th St west of S Portland Ave

ID	Cycle	Location
505	H	E 27th St east of S Oakland Ave
506	H	E 28th St east of S 38th Ave
507	H	E 28th St west of S Park Ave
508	H	E 31st St under I-35W
509	H	E 31st St west of S 11th Ave
510	H	E 32nd St east of S 21st Ave
511	H	E 38th St east of Hiawatha Ave
512	H	E 40th St east of S 11th Ave
513	H	E Fort Snelling Trail south of E 54th St
514	H	E Franklin Ave east of S 23rd Ave
515	H	E Franklin Ave east of S 29th Ave
516	H	E Franklin Ave west of S 23rd Ave
517	H	E Franklin Ave west of S Portland Ave
518	H	E Lake Calhoun Pkwy north of W 32nd St
519	H	E Lake St east of S Bloomington Ave
520	H	E Lake St west of S 47th Ave
521	H	E River Terrace north of SE Seymour Ave
522	H	Groveland Ave over I-94
523	H	Harmon Pl east of S 12th St
524	H	Hiawatha LRT Trail south of S 16th Ave
525	H	Irene Whitney Bridge over I-94
526	H	Midtown Greenway west of S Blaisdell Ave
527	H	Minnehaha Ave north of E Franklin Ave
528	H	N 2nd St north of N Plymouth Ave
529	H	N Emerson Ave north of N Plymouth Ave
530	H	N Emerson Ave north of W Broadway Ave
531	H	N Plymouth Ave west of N 2nd St
532	H	N Plymouth Ave west of N Emerson Ave
533	H	N Royalston Ave south of Glenwood Ave
534	H	NE 34th Ave Path west of NE Cleveland St
535	H	NE 5th St north of NE 13th Ave
536	H	NE Central Ave south of NE Lowry Ave
537	H	NE Cleveland St south of NE 34th Ave Path
538	H	NE Lowry Ave east of NE Central Ave
539	H	Nicollet Mall north of S 12th St
540	H	Riverside Ave north of E Franklin Ave
541	H	S 11th Ave north of E 31st St
542	H	S 11th Ave north of E 40th St
543	H	S 12th St south of Harmon Pl
544	H	S 16th Ave north of Hiawatha LRT Trail
545	H	S 19th Ave north of S 4th St
546	H	S 19th Ave south of S 5th St
547	H	S 21st Ave north of E 32nd St
548	H	S 23rd Ave south of E Franklin Ave
549	H	S 25th Ave over I-94
550	H	S 27th Ave north of E Franklin Ave
551	H	S 38th Ave south of E 28th St
552	H	S 3rd Ave south of S 4th St
553	H	S 47th Ave south of E Lake St
554	H	S 4th Ave north of S 6th St
555	H	S 4th St east of S 19th Ave
556	H	S 4th St east of S 3rd Ave
557	H	S 5th Ave north of S Washington Ave
558	H	S 5th St west of S 19th Ave

ID	Cycle	Location
559	H	S 5th St west of S 2nd Ave
560	H	S 6th St east of Nicollet Mall
561	H	S 9th St east of S 25th Ave
562	H	S Aldrich Ave south of W 24th St
563	H	S Bloomington Ave north of E Lake St
564	H	S Bryant Ave north of W 33rd St
565	H	S Bryant Ave south of W 33rd St
566	H	S Cedar Ave south of S 6th St
567	H	S Chowen Ave north of W 52nd St
568	H	S Edmund Blvd south of E 37th St
569	H	S Irving Ave south of W 33rd St
570	H	S LaSalle Ave south of S 10th St
571	H	S Lyndale Ave south of W 34th St
572	H	S Oakland Ave north of E 27th St
573	H	S Park Ave south of E 28th St
574	H	S Penn Ave over Hwy 62
575	H	S Portland Ave north of E 28th St
576	H	S Portland Ave over Hwy 62
577	H	S Portland Ave south of E 26th St
578	H	S Portland Ave south of E Franklin Ave
579	H	S Washburn Ave north of W 39th St
580	H	S Washington Ave east of S 5th Ave
581	H	S Xerxes Ave over Hwy 62
582	H	SE 14th Ave north of SE 4th St
583	H	SE 14th Ave south of SE 4th St
584	H	SE 4th St east of SE 14th Ave
585	H	SE 5th St west of SE 15th Ave
586	H	SE Emerald St south of SE University Ave
587	H	SE Harvard St south of SE Beacon St
588	H	SE Oak St north of SE Washington Ave
589	H	SE Seymour Ave Pedestrian Bridge over I-94
590	H	SE University Ave west of SE Emerald St
591	H	SE Washington Ave west of SE Oak St
592	H	W 33rd St east of S Bryant Ave
593	H	W 33rd St east of S Irving Ave
594	H	W 33rd St west of S Irving Ave
595	H	W 34th St east of S Lyndale Ave
596	H	W 39th St east of S Washburn Ave
597	H	W 52nd St east of S Chowen Ave
598	H	W 62nd St Path east of S Xerxes Ave
599	H	W Broadway Ave west of N Emerson Ave
600	H	W Fort Snelling Trail south of E 54th St
601	H	Yale Pl east of Willow St
602	H	S Pleasant Ave north of W 40th St
603	H	W 40th St east of S Pleasant Ave
604	H	S 10th Ave south E Lake St